LinnDrum

Operating Instructions

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SETTING UP

1) Plug the power cord into appropriate receptacles; turn the rear panel power switch on.
2) Connect the LEFT or RIGHT (or both) outputs to an amplifier or mixer. Additionally, each drum has a separate output that can feed external mixer.
3) Turn up the **VOLUME** knob. This is the master volume for the left and right outputs. In the **MIXER** section of the front panel, the lower row of sliders varies the drum volumes in the stereo mix. These faders do not affect levels on the individual outputs. The upper row of sliders (with the shorter travel) pan the drums in the stereo mix. For a mono signal, place the center-detented sliders in mid-position.

PLAYING THE INDIVIDUAL DRUMS AND PERCUSSION:
Drum buttons are situated in the lower left portion of the front panel. The printing below each button describes the instrument you hear when that button is pressed. Some instruments have more than one volume, permitting programmable dynamics: SNARE has three; BASS, HiHAT, CABASA, TAMBOURINE, and RIDE CYMBAL all have two. The higher the number, the greater the programmed volume. In addition to the two levels of closed hihat, there is an "open" hi-hat. Pressing the "closed" hi-hat shortly after pressing the "open" hi-hat immediately closes it off.

The upper row of drum buttons has a dual function. When **PERCUSSION** is pressed, a corresponding light goes on to indicate the upper row now plays the percussion sounds printed above the buttons. To return these eight buttons to their original drum set functions (printed beneath the button), press **PERCUSSION** again. The **PERCUSSION** light will go out. Note that only the function of the buttons is shared--percussion sounds and drum set sounds will play simultaneously in a rhythm pattern. **PERCUSSION** may be accessed at anytime--playing, recording or stopped.

TUNING THE DRUMS:
The snare, sidestick snare, toms, and congas may be tuned approximately one octave by the knobs in the **TUNING** section. A control is also provided to adjust the decay time of the closed Hihat (Hihat 1 or Hihat 2). This may be adjusted while playing to simulate different pressures on the hihat pedal. All other drums are not tunable.

PLAYING THE PRE-SET RHYTHM PATTERNS:
LinnDrum holds up to 49 separate rhythm patterns in memory. Find the buttons labeled 1-7 within the **CREATE RHYTHM PATTERN/SONG** section on the front panel. Rhythm patterns are numbered using these seven digits in any paired combination. For example, the lowest numbered patterns begin with 11, 12, 13, 14, 15, 16, 17. The highest numbered possibilities are 71, 72, 73, 74, 75, 76, 77. Therefore, there are seven groups of seven combinations

each, or 49 possible pattern numbers. The first 35 patterns (those with 1-5 as the first digit) contain pre-set patterns loaded in at the factory.

LinnDrum functions in two different modes: "PATTERN" and "SONG." "Pattern" mode is used to create or play rhythm patterns. "Song" mode is used to create or play songs. When power is turned on, LinnDrum is always in "pattern" mode. Find the button with SONG printed above it, and PATTERN printed below. The corresponding light indicates the mode LinnDrum is currently in. Push the button once, and the light switches to the other mode. The row of seven buttons to the right of this button are dual function, with the function related directly to what mode is in effect. When in "pattern" mode, the buttons facilitate the functions printed below the buttons. In "song" mode, the buttons facilitate the functions printed above the buttons.

To play a pattern:

1) LinnDrum must be in "pattern" mode (the light corresponding to PATTERN is lit). Type in a two-digit number among the pre-sets (one with 1 thru 5 as the first digit). Your entry will be reflected in the PATTERN# display.
2) Press PLAY/STOP, and the drums will play. If not, re-read prior instructions for something overlooked.
3) To stop, press PLAY/STOP again. The PLAY/STOP light will go out.

NOTE: You may type in another pattern number while LinnDrum plays the present selection. The new pattern begins playing as soon as the previous one has finished.

CREATING YOUR OWN RHYTHM PATTERNS

1) Check that LinnDrum is in "pattern" mode. Initially, select an empty pattern number beyond the pre-sets (i.e., one with "6" or "7" as the initial digit). A pattern number is empty if, when PLAY/STOP is pressed, LinnDrum "beeps" once, and blinks momentarily. If the PLAY/STOP light stays on, even if there is no sound, some length has been reserved under that number, and therefore it is not completely empty.
2) Find the button with RECORD printed beneath it. Hold down RECORD, and press PLAY/STOP. You'll hear 1/4 note metronome clicks. If not, recheck the master volume and sliders and try the above again. After every eight clicks, a louder click is heard and the PLAY/STOP light blinks. This is the downbeat of a two-measure, 4/4 time repeating "loop" (the automatic setting whenever you begin recording a new pattern). Both length and time signature can be easily adjusted. See the section: "Changing Pattern Length and Time Signature."
3) Use the TEMPO knob to achieve a comfortable pace. Slow down as much as you wish when entering a complex rhythm, then return to the optimum tempo to listen back to it.
4) Hit any drum button, in time with the click, until you come to top of the repeating "loop." The rhythm on that particular

drum is now established. You may continue to "overdub" other drums and percussion as much as you like.

5) Press **PLAY/STOP** when you are finished. This pattern is now stored (even with power off) under the **PATTERN #** you selected.
6) To play the rhythm pattern, press **PLAY/STOP**. The metronome disappears in playback mode. Press it again to stop.

To add more drums to your new pattern, simply repeat the above steps. Re-entering "record" mode does not erase anything from a selected pattern; rather, it allows you to "overdub" on the existing rhythm.

NOTE: The pattern you recorded may sound better in playback than what was actually entered. This is because LinnDrum is automatically set to correct timing errors to the nearest 1/16 note. Adjustments to this are explained in the section: "Error Correct."

CAUTION: Despite LinnDrum's large internal memory, eventually it is possible to run out of memory while recording. If this happens, LinnDrum will stop recording, the **PATTERN#** display will blink on and off, and begin "beeping." See the section: "Out of Memory Error."

TEMPO:
If you want to find out the current tempo setting in beats-per-minute, hold down the **BPM/TRIGGER** button. If the tempo is less than 100 BPM, it will read-out in the **PATTERN#** display. If the tempo is greater than 99 BPM (therefore necessitating three digits), the first digit appears in the **STEP#/%MEM** display and the following two digits appear in the **PATTERN #** display. Beats-per-minute can be displayed while playing or stopped.

AVAILABLE MEMORY CHECK:
Occasionally it is wise to check the "space" available for recording rhythm patterns, to avoid "out-of-memory error." Although LinnDrum has a capability of 49 rhythm patterns, it is possible to exhaust the memory before all are utilized. Memory is consumed by the length and complexity of the drum patterns, rather than the actual number of patterns.

To check on memory available:
LinnDrum must be in "pattern" mode. Hold the **RECORD** button, and observe the number displayed in **STEP#/%MEM** (the upper read-out). This indicates the percentage of memory available for programming patterns or songs. The maximum number displayed is 99 (percent), with all data fully erased.

OUT-OF-MEMORY ERROR (What to do if the PATTERN# display starts blinking):
If while recording, copying, or loading data from tape, the **PATTERN #** display begins blinking, and the unit repeatedly

"beeps," you must:
1) Stop the blinking by pressing PLAY/STOP.
2) Erase unnecessary patterns to provide room for the current ones. You may wish to store some patterns first for later reload. See the section, "Cassette Tape Storage."

ERASING RHYTHM PATTERN DATA

Rhythms can be selectively edited in four ways. These procedures all utilize the **ERASE** button, which functions only in pattern mode.

1) TO ERASE AN ENTIRE PATTERN:
Hold **ERASE**, and type in the two-digit number of the pattern to be erased. LinnDrum will "beep" to verify erasure. Now, if that pattern number is typed in, and PLAY/STOP is pressed, LinnDrum will "beep" and the PLAY/STOP light will momentarily blink, indicating it is completely empty.

2) TO ERASE ALL OCCURRENCES OF A SPECIFIC DRUM THROUGHOUT A PARTICULAR PATTERN:
Type in the two-digit pattern number. Hold **ERASE**, and press any button of the instrument you want to erase. LinnDrum will "beep" to verify erasure.

3) TO ERASE A DRUM AT SPECIFIC POINTS WITHIN A PATTERN:
Type in the two-digit pattern number, and enter record (hold down **RECORD**, and press PLAY/STOP). With the pre-recorded pattern playing, hold down **ERASE**, then press the button of the desired drum to be erased precisely at the moment(s) in the pattern it should be deleted.

EXAMPLE: To erase a cowbell from the second measure of a two-bar pattern, enter record, then simply hold **ERASE** and **COWBELL** simultaneously during the second measure only.

4) TO COMPLETELY ERASE ALL DATA IN LINNDRUM:
Hold **ERASE**, and press **LOAD** (the button located under CASSETTE on the front panel). LinnDrum will "beep" to verify erasure.

COPY FUNCTIONS

COPYING AN EXISTING PATTERN (AS IS) ON TO ANOTHER PATTERN NUMBER:
1) LinnDrum should be in "pattern" mode. Make sure the number you are copying into is fully erased (hold **ERASE**, and type in the two-digit number being copied to).
2) Type in the two-digit number of the pattern to be copied from.
3) Hold **COPY**, and type the two-digit number to be copied to. LinnDrum will "beep" to verify a successful copy. Both pattern numbers now contain identical rhythms.

JOINING TWO PATTERNS AS ONE:
This procedure is virtually identical to that used for copying a pattern to another location (described in the preceding section), except that when copying one pattern to another location where rhythm data exists, LinnDrum tags (or appends) the pattern you are copying to the end of what is already there. For instance, to append pattern #64 on to the end of pattern #63:

1) Type in #64.
2) Hold down COPY, and type #63. A "beep" verifies a sucessful append. Now #63 contains its original pattern, plus the rhythm from #64 immediately following it. The rhythm originally in #64 remains intact.

DOUBLING THE LENGTH OF RHYTHM PATTERNS:
This function simplifies the task of doubling the length of a repeating pattern (a two measure pattern becomes four measures) by copying the data (if any) which exists under a pattern number into a newly created second half. No data is lost, but rather a mirror image of the pattern (whatever the existing length) is created and added on to the end of itself.

1) LinnDrum must be in pattern mode. Type in the two-digit pattern number.
2) Hold COPY, and re-type the same pattern number. LinnDrum will "beep" to verify the copy.

Doubling can be repeated any number of times (e.g. four measures can be made into eight, eight into sixteen, etc.).

CHANGING PATTERN LENGTH AND TIME SIGNATURE

This function will adjust the time signature and/or number of measures of a pattern from the typical two-measure, 4/4 time format, to virtually anything desired. This is accomplished by altering the length of the repeating "loop" in the selected pattern number.

To alter the length of a rhythm pattern:
1) LinnDrum must be in "pattern" mode. Type in the desired two-digit pattern number.
2) While holding RECORD, press LENGTH. LinnDrum has now entered "length" mode. This is the same as "record" mode (clicks are produced), except the PLAY/STOP light blinks.
3) At the moment you want the pattern to start repeating, press PLAY/STOP. This will cause LinnDrum to stop, and the time which passed between pressing LENGTH and PLAY/STOP is the new length for the selected pattern.

EXAMPLE #1:
To create a length of one measure of 3/4:
A) While holding RECORD, press LENGTH (the recording clicks will be heard).

B) Count out three clicks (three 1/4 notes). On the fourth click (the fourth 1/4 note), press PLAY/STOP.

EXAMPLE #2:

A) While holding RECORD, press LENGTH (the recording clicks will be heard).

B) Count out seven 1/8 notes (since LinnDrum only produces 1/4 note clicks, you will have to count two 1/8 notes for each 1/4 note click). On the eighth 1/8 note, press PLAY/STOP.

NOTE: The error correct system will correct any error in timing when PLAY/STOP is pressed.

4) Check the new length by entering "record" mode (while holding RECORD, press PLAY/STOP). The time between the loud clicks (indicating the start of the rhythm pattern) should be the same as the time between pressing LENGTH and PLAY/STOP in steps #2, #3 above. For example #1, the length should be three 1/4 notes, and for example #2, seven 1/8 notes (three and one-half 1/4 note clicks).

Changing pattern length or time signature can be done whether a pattern number has rhythm data, or is empty. For instance, try changing an existing two-measure, 4/4 pattern "loop" to one measure of 7/8 by following the same steps above. When you're finished, the data from the first seven 1/8 notes is retained as the repeating "loop," with the rest permanently "chopped" off.

ERROR CORRECT

When creating your own rhythm patterns, timing errors are automatically corrected in playback by the error correct function. LinnDrum accomplishes this by "moving" your rhythm entries to the nearest 1/16 note. The error correct setting may be changed so that your entries are moved to either the nearest 1/8 note, 1/8 note triplet, 1/16 note triplet, 1/32 note, or 1/32 note triplet. In addition, the error correct function may be defeated entirely by selecting HI (high resolution). In this mode, LinnDrum will play back your drum entries exactly as they were recorded. When first recording a new rhythm pattern, LinnDrum automatically selects the 1/16 note setting.

NOTE: Error correct will not affect previous recordings, only those about to be made.

The error correct section contains seven lights labeled "1/8" through "HI." One of these lights will light, indicating the current setting, when either **ERROR CORRECT** or **RECORD** is pressed, and will stay lit during record mode. (One of the "timing" lights may also go on--ignore for now).

To change to a different error correct setting:
1) Hold down **ERROR CORRECT** (the current setting will be indicated by one of the lights).
2) Press the button directly below the desired error correct setting (these are multiple function buttons). The selected indicator light will go on.
3) Release **ERROR CORRECT**.

The error correct setting may be changed either when LinnDrum is stopped, or while recording. In addition, it may be changed any number of times during recording, allowing each particular "overdub" to a rhythm pattern to take advantage of the best setting. For example, the 1/16 setting is ideal for most rhythms in 4/4 time, the 1/32 setting is best when entering 1/32 notes, the 1/8T setting is for entering 1/8 note triplets, etc. The following describes a typical use of error correct:

1) Select a blank pattern number.
2) Enter record mode by holding **RECORD** and pressing **PLAY/STOP**. (The "1/16" light will go on indicating that LinnDrum has automatically selected 1/16 note error correct).
3) Enter bass, snare, and hihat parts by tapping those buttons in time to the click (when the drums play back, they will have been corrected to the nearest 1/16 note).
4) While still in record mode, hold down **ERROR CORRECT**, and press the button directly below "1/32" (the 1/32 indicator light will go on).
5) Slow the tempo control down to a pace comfortable for entering 1/32 notes.
6) Enter a brief 1/32 note hihat part into your pattern (when it loops back around, it will play back as perfect 1/32 notes).
7) Return the tempo control to its original position.

If record mode is entered on an existing rhythm pattern (such as a pre-set), ERROR CORRECT will automatically switch to the setting which was originally used to create that pattern. This will insure that any parts "overdubbed" on to the pattern will not conflict with the existing parts.

TIMING (ADJUSTING RHYTHM "FEEL")

This function is very useful for creating "human feel" in your rhythm patterns. Our research into why drummers sound better than drum machines has led to one important observation: drummers often play their 1/16 notes somewhere between "even" 1/16 notes and "shuffled" (or "swingtime") 1/16 notes. This also holds true for 1/8 notes. LinnDrum's timing function achieves the same effect by providing six subtle variations from straight (A), to shuffle (F).

The current timing setting (A-F) is displayed whenever BEFORE, AFTER, ERROR CORRECT, or RECORD is pressed, and remains lit while in record mode. In addition, either the 1/8 light or the 1/16 light will go on to indicate whether the timing setting (A-F) applies to the 1/8 or 1/16 notes in the selected rhythm pattern. To change the "feel" (timing setting) of the selected rhythm pattern:

1) LinnDrum must not be recording or playing.
2) Hold down AFTER (the existing timing setting, A-F, will be displayed, and either 1/8 or 1/16 will be displayed to indicate whether you will be changing the feel of the 1/8 or 1/16 notes in the pattern).
3) Press the button directly below the desired timing setting, A-F (the selected light will go on and a "beep" will sound, indicating the selected rhythm has been changed).
4) Release AFTER (lights will go out).

The following example will demonstrate the "AFTER" function by changing pre-set #11 from straight 1/8 notes to shuffled 1/8 notes, and back again:

1) LinnDrum should not be recording or playing.
2) Select rhythm pattern #11 by typing: 1, 1.
3) Press PLAY/STOP to start playing.
4) Listen to the "straight" 1/8 note feel.
5) Press PLAY/STOP again to stop.
6) Hold down AFTER (the "A" and "1/8" lights will go on).
7) Press the button directly below E (the "E" light will go on, and a beep will sound to indicate that the timing has been changed).
8) Release AFTER (lights will go out).
9) Press PLAY/STOP to start playing.
10) Notice that the "straight" 1/8 note feel has changed to a "shuffled" 1/8 note feel.
11) Press PLAY/STOP to stop playing.

12) Hold down AFTER (the "E" and "1/8" lights will go on).
13) Press the button directly below A (the "A" light will go on, and a "beep" will sound to indicate the timing has been changed).
14) Release AFTER (lights will go out).
15) Press PLAY/STOP to start playing.
16) Note that the "shuffled" 1/8 note feel has changed back to the original "straight" 1/8 note feel.
17) Press PLAY/STOP to stop playing.

Continue experimenting with rhythm pattern #11 by repeating the above steps, except this time, instead of selecting E, try B,C,D, or F. Although the "E" setting is a mathematically perfect shuffle (all notes fall on perfect 1/8 note triplets), many people find that the "D" or "C" settings have a better "feel."

As stated earlier, it is also possible to adjust the timing of the 1/16 notes. The following example will demonstrate this by changing pre-set #21 from a "straight" 1/16 note feel to a "shuffled" 1/16 note feel, and back again:

1) LinnDrum should not be recording or playing.
2) Select rhythm pattern #21 by typing 2, 1.
3) Press PLAY/STOP to start playing.
4) Listen to the "straight" 1/16 note feel.
5) Press PLAY/STOP to stop playing.
6) Hold down AFTER (the "A" and "1/16" lights will go on).
7) Press the button below C (the "C" light will go on, and a "beep" will sound to indicate that the timing has been changed.
8) Release AFTER (lights will go out).
9) Press PLAY/STOP to start playing.
10) Notice that the "straight" 1/16 note feel has changed to a "shuffled" 1/16 note feel.
11) Press PLAY/STOP to stop playing.
12) Hold down AFTER (the "C" and "1/16" lights will go on).
13) Press the button directly below A (the "A" light will go on, and a "beep" will sound to indicate the timing has been changed).
14) Release AFTER (lights will go out).
15) Press PLAY/STOP to start playing.
16) Notice that the "shuffled" 1/16 note feel has changed back to the "straight" 1/16 note feel.
17) Press PLAY/STOP to stop playing.

Continue experimenting with rhythm pattern #21 by repeating the above steps, except this time, instead of selecting "C," try "B," "D," "G," or "F." Although the "A" setting produces mathematically perfect 1/16 notes, many people find that the "B" or "C" settings have a better "feel".

The timing and error correct settings will change from one rhythm pattern to another. This is because they are acting as a "read-out" of the settings which were used to create that particular pattern. By listening to a pattern, then examining its timing

setting, you will soon be able to judge which timing setting (A-F) will produce the "feel" you want for a particular song.
NOTE: Occasionally, you may find that you want to change the timing of the 1/8 notes in a particular pattern, but since ERROR CORRECT displays 1/16, AFTER will only affect the 1/16 notes. When this happens:

1) Change the error correct setting to "1/8" (while holding **ERROR CORRECT**, press the button below 1/8).
2) Enter the desired timing setting using "AFTER" (while holding **AFTER**, press the button directly below the desired timing setting, **A-F**).

NOTE: If a rhythm pattern displays an error correct setting of 1/8T (entries moved to the nearest 1/8 triplet), the timing functions will not operate, since the rules on which they operate do not apply to 1/8 note triplets.

Whenever a timing setting (A-F) is changed using the **AFTER** button, the function of error correct is also modified. From that point on, any additional recording on the selected rhythm pattern will play back on the new timing setting. Instead of your errors being corrected to the nearest "perfect" 1/8 or 1/16 notes, they will be moved to "shuffled" 1/8 or 1/16 notes, according to the timing setting which was last selected. This insures that all overdubs on a particular rhythm pattern will have the same "feel."

Occasionally, it is desirable to have different instruments playing different "feels" (timing settings) on the same rhythm pattern. For example, to simulate the effect of many percussionists with varied styles playing together, you might want the hihat 1/16 notes to have a timing setting of "A," the cabasa 1/16 notes to have a timing setting "B", and the tambourine 1/16 notes to have a setting of "C." This can be achieved by the use of the BEFORE function. Like AFTER, entering a timing setting while holding BEFORE will cause error correct to "move" future drum entries on to "shuffled" 1/8 or 1/16 notes according to the selected timing setting. However, BEFORE has no effect on the existing rhythm pattern. The advantage of BEFORE is that you needn't change the feel of an existing rhythm part to overdub a new part with a different feel. The following example will demonstrate the BEFORE function to create a rhythm pattern with different feels (timing settings) for the hihat, cabasa, and tambourine:

1) Enter record mode on a blank rhythm pattern by holding **RECORD**, and pressing **PLAY/STOP**. (the "1/16" and "A" lights will go on).
2) Enter 1/16 notes on the hihat for the full two measures.
3) While holding **BEFORE**, press the button directly below B (the "B" light will come on).
4) Overdub 1/16 notes on the cabasa for the full two measures.
5) While holding **BEFORE**, press the button directly below C (The "C" light will go on).

6) Overdub 1/16 notes on the tambourine for the full two measures. While listening back, you will notice that each of the instruments has a slightly different feel. While this effect is very interesting, most people will find the AFTER function far more useful than the BEFORE function.

CONSTRUCTING SONGS

A "song" in the LinnDrum is simply a list of rhythm patterns to be played in sequence, one after another. For example, one rhythm pattern might contain an intro, another could be a verse rhythm, another a chorus...etc. The song "steps" through the different sections, one at a time. To construct a song:

1) Record some patterns to be used as steps in a song (intro, verse, fills, chorus, etc.).
2) Enter **SONG** mode (press the **SONG/PATTERN** to light the LED next to SONG). The row of buttons that facilitates error correction, timing, copy, erase and record (in **PATTERN** mode) is now activated for those functions printed above the buttons having to do with the assemblage of song material. The **STEP#/$MEM** display will now be lit, and display "0."
3) Write down a list of patterns to be entered, in the desired order. Then hold down **ENTER**, and type in the list in precisely the same order. Note that after each two-digit pattern number is entered, the **STEP#/$MEM** display automatically increments by one, indicating the number of the step you have just filled. Up to 99 patterns (or steps) may be entered.
4) After the last pattern has been entered, hold down **ENTER**, and press **END**. This terminates the song and deletes any pre-existing steps after the last one you entered. When this "end" step is reached during playback of the song, LinnDrum will immediately repeat the song, starting at step #1. For example, if four patterns are entered in order as a song, and **ENTER** and **END** are subsequently pressed, only the first four steps will be played, and they will be repeated in the same order until stopped. It is possible, however, to change to a mode in which all songs automatically stop after the last step entered. To do this, hold **SONG#**, and press **END** (a "beep" will sound). Your unit will stay in this mode until the same buton sequence is pressed again, or if power is turned off.

   Caution: If **ENTER** and **END** are not pressed upon completing the entry of all steps in the song, LinnDrum will continue to play previously programmed steps beyond those you have just entered. By pressing **ENTER** and **END**, all programs beyond the last one you have entered are deleted.

5) To play any song, LinnDrum must always be in **SONG** mode. Press **PLAY/STOP** to play a song. Press again to stop.

EDITING THE SONG

When in SONG mode, the PATTERN# display always shows the contents of the displayed STEP#. To examine a higher or lower step number, press <--- (lower) or ---> (higher). Tapping these buttons once increases or decreases the display by one step; holding them down scans many steps as though the buttons were tapped repeatedly.

IF YOU WANT TO CHANGE THE CONTENTS OF A STEP FROM ONE PATTERN TO ANOTHER (OR TO CORRECT AN ERRONEOUS ENTRY):

1) Use the <--- and ---> buttons to locate the step just before the one you wish to change.
2) Type in the preferred two-digit pattern number. The STEP# display will increment by one, indicating that the appropriate pattern number has been placed in the proper step.

For example: To change the contents of step #15 from pattern #14 to pattern #21: Use <--- and ---> buttons to locate step #14. Type 2,1. The STEP# display will increment by one, indicating that the pattern number has been entered into the proper step, #15.

STEP#:	12	13	14	15	16	17
BEFORE CHANGE:	11	12	13	14	15	16
AFTER CHANGE:	11	12	13	21	15	16

TO INSERT A STEP BETWEEN TWO EXISTING SONG STEPS:
(This function inserts a new pattern in the middle of a song and moves all steps located above the insertion point up by one).

1) Use the <--- and ---> buttons to locate the lower of the two already existing steps.
2) While holding INSERT, type the number of the pattern to be inserted. A "beep" will sound to verify insertion.

For example: To insert pattern #24 between step #8 (which contains pattern #17) and step #9 (which contains pattern #21), use the <--- and ---> buttons to find step #8. While holding INSERT, type 2,4. A "beep" will sound. Step #9 now contains pattern #24, and the previous contents of step #9 (pattern #21) now resides in step #10. All higher steps have also been moved up one position.

STEP#:	7	8	9	10	11	12	13
BEFORE INSERT:	16	17	21	22	23	24	25
AFTER INSERTING NEW PATTERN # :	16	17	24	21	22	23	24

TO DELETE A STEP:
(In deleting a step from a song, the gap left by the deletion is automatically closed by moving all higher steps down by one).

1) Use <--- and ---> buttons to locate the step number to be deleted.
2) Press DELETE. A "beep" will sound, indicating that the contents of the displayed step number have been deleted, and all higher numbered steps been moved down by one to close the gap.

   For example: To delete the contents of step #3 (containing pattern #13), use the <--- and ---> buttons to locate #3. Press DELETE (a "beep" will sound). Note that the PATTERN# display now reads 14, which has been moved down from step #4. All higher steps have also been moved down by one.

STEP #:	1	2	3	4	5	6	7
BEFORE DELETE:	11	12	13	14	15	16	17
AFTER DELETE:	11	12	14	15	16	17	18

ACCESSING OTHER SONGS:
So far, we have described building and editing one song. There is a capability, however, of 49 songs that can be held in programmed memory, each containing its own set of 99 steps. Songs are numbered exactly like rhythm patterns. To see which song is currently being used, (in "song" mode) hold the SONG# button down. The STEP#/$MEM display indicates the song number you are now in. To change to a different song number, continue holding down SONG#, and type in the number of the song you want to access. The song number you enter will remain current until changed or until power is turned off and on again. LinnDrum reverts to song #11, whenever power is turned on.

PLAYING A SONG BEGINNING FROM ANY STEP:
Normally, when PLAY/STOP is pressed in "song" mode, the song starts playing from step #1. It is possible, however, to begin playing a song from any step within the song.

1) Use <--- and ---> to locate the desired starting step number.
2) Hold down INSERT, then press PLAY/STOP.

CASSETTE TAPE STORAGE

This feature permits using an ordinary cassette recorder as an external memory for temporarily storing any data programmed into LinnDrum. The actual drum sounds of rhythm patterns are not being stored; rather, it is an electronic signal which contains a coded representation of the rhythm pattern and song data programmed into LinnDrum. This allows a vast library of rhythm patterns and songs--far greater than LinnDrum's large internal memory--to be compiled for later re-load as needed. It also permits data to be transferred from one LinnDrum to another.

To use this feature, you will need a cassette recorder with the following features:

1) GOOD QUALITY. Beware of cheap units--they make very poor data recorders.
2) AC POWERED. Battery power causes speed variations which will cause tape errors.
3) MONITOR OUTPUT, EXTERNAL SPEAKER OUTPUT, or HEADPHONE OUTPUT. Line level output is not adequate.
4) BUILT-IN MICROPHONE. So data can be verbally identified.
5) BUILT-IN SPEAKER. So that data on the cassette can be easily found.
6) TAPE COUNTER. So that data on the cassette can be indexed and therefore more easily found.
7) AUXILIARY or RADIO INPUT. Units with MIC input only are not adequate.

We recommend the following cassette recorder for its consistent performance:

	Make	Model	Retail Price	Recommended Playback Volume
1)	Superscope	C-202LP	$120.00	4-6

We strongly recommend that you purchase one of these units, keep the heads clean, use only high quality tape, and use it for no other purpose. Remember: this is to be an external memory for a highly sophisticated piece of equipment.

HOOKING UP THE CASSETTE RECORDER:
You will need two quality patchcords with a 1/4" male phone plug on one end, and a 1/8" male mini-phone plug on the other. Don't use adaptors--they are not reliable.

1) Connect a patchcord from LinnDrum's **CASSETTE OUT** jack to the recorder's **AUX IN** or **RADIO IN** jack. Recorders with MIC IN only are not adequate.
2) Connect a patchcord from LinnDrum's **CASSETTE IN** jack to the recorder's **MONITOR OUT** or **EXTERNAL SPEAKER OUT** or **HEADPHONE OUT** jack.
3) Set the cassette's playback level within the recommended setting (see preceding chart). If you are not using one of the recommended units, set the playback level at halfway.

4) Set the cassette's tone to "HI."
5) Activate the recorder's "automatic" record level. If it doesn't have this feature, set the recording level to 0 DB. To cause LinnDrum to emit its cassette tone, press STORE. After the level is set, stop the tone by pressing PLAY/STOP.

TAPE STORAGE PROCEDURE:
1) Select one of the two modes of storage described:
   A) STORE EVERYTHING: This mode stores all data programmed into LinnDrum. The disadvantage of this mode is that, when recorded, it will replace any data which existed in LinnDrum at the time of recording. To create a "Store Everything" tape, LinnDrum must be in PATTERN mode ("pattern" light is on).

   B) STORE SONG: This mode is used when it is desired to store only the currently selected song. The list of steps in the song is stored, as well as all rhythm patterns which occur in the song. To store one pattern only, simply type it in as step #1 in one of the 49 songs, then store that song. To create a "Store Song" tape, LinnDrum must be in "song" mode (SONG light is on).

2) Insert a blank cassette in the recorder and rewind.
3) Using the recorder's microphone, record a short verbal identification of the data which is to follow.
4) Put the cassette machine into record mode.
5) Wait six seconds for the leader to pass and for the tape to settle.
6) Press STORE on LinnDrum.
7) Wait for "store" light to go off.
8) Rewind cassette to beginning of data tone (listen to speaker).
9) The cassette must now be verified to insure that it will load successfully at a later time. To enter "verify" mode, press STORE and LOAD simultaneously.
10) Put cassette into play mode.
11) If "store" and "load" lights begin blinking on and off, this indicates a verify error. First stop the blinking by pressing PLAY/STOP. Then, repeat from step #8 above. If the error persists, read "Eliminating Tape Errors" and repeat from step #8. If still no luck, start again from step #1.
12) If "store" and "load" lights go off (and stay off), this indicates a successful verify. You're finished.

LOADING A "STORE EVERYTHING" TAPE:
No setup is required on LinnDrum. Caution: Once tape data is loaded in, previously existing contents in the LinnDrum memory is replaced.

1) Locate the start of the data tone on cassette tape.
2) Press LOAD on LinnDrum.
3) Play the cassette.
4) If the "load" light starts blinking, this indicates a tape

error. First, stop the blinking by pressing PLAY/STOP, then repeat the load procedure from step #1. If the error persists, read "Eliminating Tape Errors," and repeat from step #1.

5) If the "load" light goes out, the load was successful.

LOADING A SONG TAPE:

Loading a "Store Song" tape won't cause any data to be erased, but will change its locations in LinnDrum. Since a song consists of random combinations of rhythm patterns, if these patterns were to be loaded into their original pattern numbers, they might replace some new patterns which existed in LinnDrum at the time of loading. Once LinnDrum recognizes that it's loading a "Store Song" tape, it moves all existing rhythm patterns into the lowest available pattern numbers, clearing the higher numbers for the new song (the contents of any existing songs are changed to match). The rhythm patterns in the new song will load starting at the first blank pattern number; the song (the list of steps) will load into the selected song number; and all the steps will be re-numbered to match the pattern numbers. When the song plays, it will be exactly as before it was stored to tape, except the pattern numbers will be different.

1) Select the song number to be loaded into. The tape will load into the current song number.
2) Locate the start of the data tone on the cassette.
3) Press LOAD on LinnDrum.
4) Press PLAY on the cassette.
5) If the pattern number display starts blinking, this indicates that there is not enough free memory in LinnDrum to load the song tape. First, stop the blinking by pressing PLAY/STOP, then erase some rhythm patterns or songs to provide more free memory. Now repeat from procedure step #1.
6) If the "load" light starts blinking, a tape error has occurred. First, stop the blinking by pressing PLAY/STOP, then read "Eliminating Tape Errors" and repeat from procedure step #1.
7) If the "load" light goes out, the load was successful. Play the song by pressing PLAY/STOP.

ELIMINATING TAPE ERRORS:

The following are possible causes of tape errors:

1) The connecting patchcords are faulty, or not connected properly.
2) The playback volume is too low, or too high. Listen to data tone through the cassette speaker. It should be as loud as possible without distorting. To set it most accurately, do the following: When LOAD is first pressed to enter "load" mode, continue to hold LOAD down. Now, play cassette. As long as LOAD is held down, the cassette's output will play through to the LinnDrum's mixer output. Set the playback level to the lowest position at which the tone sounds clear, then increase it about 10%.

3) The tape heads are dirty.
4) The tape itself is bad.
5) The cassette recorder is faulty, or is of inferior quality.
6) The record level was too high, or too low (should be 0 DB or use "automatic" record level).
7) The tone should be set to full.
8) The cassette machine is running on batteries instead of AC.

NOTE: Any tape function may be stopped at any time by pressing PLAY/STOP.

SYNCING LINNDRUM TO TAPE

It is possible to overdub the LinnDrum in sync to a pre-recorded multi-track master tape provided that:

1) LinnDrum was used to record the master tape.
2) LinnDrum's sync tone was recorded on its own track during the recording to the master tape.

The process of syncing to tape is actually two operations:

1) Recording the original part and sync track.
2) Overdubbing LinnDrum to the original recording.

To record original LinnDrum part and sync tone:

1) The EXT. SYNC light should be off (if not, press **EXT. SYNC**).
2) Connect SYNC OUT jack to the line input of the console: assigned to its own track, bypassing noise reduction.
3) Prepare drum parts for original recording (this is usually simply one rhythm pattern repeating, used as a "guide track" for the musician to play to.
4) Set record level of sync track to -3 DB by pressing **PLAY/STOP** (LinnDrum will only emit its sync tone while playing). Press it again to stop.
5) Put multi-track machine into record.
6) Wait 5 seconds.
7) Press **PLAY/STOP** to start LinnDrum playing.
8) Record LinnDrum as long as you like, then stop it.

The original master drum track and sync track are now completed. You may now overdub the other instruments. Once they are added, it may now be easier to construct the final "song" on LinnDrum, and overdub it to the tape.

To overdub LinnDrum to the original master recording:

1) Prepare the "song" to be overdubbed (intro, changing parts, transitions, fills, etc.).
2) Connect the output of the multi-track's sync track to **SYNC IN** on LinnDrum.
3) Rewind the multi-track to about 5 seconds before sync tone starts (where you originally pressed record).
4) Press **EXT. SYNC** on LinnDrum (light will go on).
5) Put the multi-track machine into play.
6) Press **PLAY/STOP** (LinnDrum will start playing at exactly the same point the original drum track started playing, and remain in sync throughout the song).

The SYNC IN jack may also be used, if desired, to drive LinnDrum from an external tempo source. The tempo source must be a pulse waveform with 48 pulses for each 1/4 note LinnDrum plays.

REAR PANEL INPUTS/OUTPUTS

TRIGGER INPUTS:
These five inputs may be used with drum synthesizer control pads (such as SYNDRUM pads) or virtually any audio source to remotely trigger any of the drum buttons. The normal assignment of the trigger inputs is:

1) Snare
2) Tom (Mid)
3) Tom (Low)
4) Ride
5) Crash

However, any input may be re-assigned to any drum. To remotely trigger one of these drums, connect a control pad to the desired trigger input (for example, snare is input #1), and play the pad. These inputs are not pressure sensitive; whether you play the pad hard or soft produces the same volume. There is a sensitivity adjustment for each of the five trigger inputs, which may need adjustment depending on what you are using to trigger LinnDrum. If the adjustment is set too high (clockwise), LinnDrum may falsely trigger on background noise or may double-trigger when the pad is struck hard. If the adjustment is set too low (counterclockwise), a soft stroke of the pad will not be enough to trigger LinnDrum. The adjustment may be made with a small blade screwdriver by inserting it into the small hole next to the trigger input jack.

To re-assign a trigger input to a different drum button:
1) Hold down the drum button you wish the trigger input to play.
2) Play the drum pad connected to the desired trigger input.
3) Release the drum button. Playing the pad again will now automatically play the drum button which was held down. This assignment will remain until re-assigned, or until power is turned on again.

Since these inputs accept any audio input, a valuable application is restoring poorly recorded drum tracks. For example, to "fix" a poorly recorded snare track, plug the tape recorder's output into trigger input #1 (normally assigned to snare). Whenever the poorly recorded snare plays from the tape, it will trigger the LinnDrum's snare, which may be recorded on a separate track.

TRIGGER OUTPUT:
This output provides a 5 volt trigger pulse, used for synchronization to external sequencers or synthesizers. It may be programmed to output pulses on every 1/8 note, 1/8 note triplet, 1/16 note, 1/16 note triplet, 1/32 note, or 1/32 note triplet. In addition, it may be programmed to output a pulse every time the cowbell plays. The 1/16 note setting is automatically selected when LinnDrum is first turned on.
To display the current trigger output setting, press BPM/TRIGGER. The current setting is indicated by one of the lights in the

error correct section. For example, if 1/16 is lit, this means a trigger pulse will be outputted on every 1/16 note of music LinnDrum plays. If HI is lit, a pulse will be outputted on every 1/64 note triplet. If all seven lights are off, this means a pulse will only be outputted whenever the cowbell plays. (Note that pressing BPM/TRIGGER also causes the tempo setting to be displayed in the numeric displays--this is a dual function button).

To change to a different trigger output setting:
1) Hold down BPM/TRIGGER (the error correct lights will display the current trigger setting).
2) Press the button directly below the desired TRIGGER OUTPUT setting (use the seven error correct settings). To select the mode in which a pulse is outputted every time the cowbell plays, press the cowbell (be sure percussion mode is on). To select 1/64 note triplets, press the button directly below HI. The newly selected setting light will go on, indicating the setting is changed.
3) Release the BPM/TRIGGER button (the error correct lights will return to their original state).

One popular use of the trigger output is to enable a synthesizer to play constant 1/16 notes in sync with LinnDrum. To do this, connect LinnDrum's TRIGGER OUT to the synthesizers GATE IN. Set up a fast attack, long release bass sound, for example. When you play LinnDrum, the synthesizer will automatically play 1/16 notes in sync. Playing the keyboard will determine the pitch only. For another interesting effect, change the trigger setting to cowbell, and program a cowbell pattern into the current rhythm pattern. When it plays back, the synthesized bass sound will play whenever the cowbell plays.

The trigger output may also be used to step an external sequencer. If your sequencer requires 1/16 note steps, set TRIGGER OUT to 1/16; for 1/32 notes, set it to 1/32, etc. Note: some sequencers require a high frequency pulse waveform which is a multiple of all note values. The HI setting (1/64 note triplets--24 pulses per 1/4 note) may be used for this. If higher resolution is required, use the TAPE SYNC OUT jack. It outputs a 0-5 volt DC pulse waveform with 48 pulses for every 1/4 note LinnDrum plays.

AUDIO OUTPUTS:
Individual outputs are provided for each of the 15 drums (plus the recording click), as well as stereo mixer outputs left and right.

CONTROL VOLTAGE INPUTS:
These inputs will accept a control voltage of 0-5 volts DC to remotely control the pitch of: 1) the snare and sidestick snare; and 2) the toms and congas. A typical application would be the use of a control voltage pedal to sweep the pitch of the toms.

REMOTE PLAY/STOP:
This jack accepts a normally open, momentary contact foot switch. When pressed, the foot switch will duplicate the function of the PLAY/STOP switch.

CHANGING DRUM SOUNDS

The digital recordings of drums in LinnDrum are contained in integrated circuits, or "chips," inside the chassis. The recordings used in LinnDrum were selected based on drum sounds commonly found in popular music. However, because people have different tastes, alternate drum sound "chips" may be purchased, made from a variety of drum recordings. To hear the chips that are available, a sample recording ("Alternate Drum Sound Chips") may be purchased from Linn Electronics, or heard at your local dealer. Once you have made your selection(s):

1) You must purchase a CHANGEABLE SOCKET from your dealer. (This is a special socket which allows you to change drum sound chips yourself).
2) Your dealer will install the CHANGEABLE SOCKET and instruct you as to how the chips may be changed.
3) You may now purchase the desired drum sound chip and install it yourself, keeping the stock chip to be used when its sound is desired.

If the sound you want is not one found on the alternate sounds recording, custom chips can be made from tape recordings. Contact Linn Electronics for details.

POWER REQUIREMENTS: 90-135 volts AC.
Internally switchable to 180-270 volts AC.

SIZE: 11 5/8" X 22" X 4 3/8"

WEIGHT: 22 LBS.

LIMITED WARRANTY

Linn Electronics, Inc. will repair, free of charge, any LinnDrum that, in our opinion, is defective in materials and/or workmanship, and has not been subjected to abuse, for a period of one year from date of purchase. This warranty is issued to the original purchaser only, is non-transferable, and is subject to the following conditions:

1) The customer must call his dealer to establish that the LinnDrum is definitely malfunctioning. If the dealer cannot determine this, the customer must call Linn Electronics, Inc. for the same reason.
2) In the event that factory analysis is determined necessary, the customer will be requested to return the malfunctioning unit in the original shipping carton (or Anvil-type road case), prepaid, to:

LINN ELECTRONICS, INC.
18720 OXNARD STREET
TARZANA CA 91356
TELEPHONE: [213] 708-8131
ATTENTION: LinnDrum Service

3) The customer must have returned the warranty registration sheet to Linn Electronics at the time of purchase or (less preferably) provide proof of purchase (with date of purchase) as well as a detailed description of the problem(s). Include a return street address (no post office boxes) for return via UPS regular ground transportation. All units deemed out of warranty will be returned C.O.D. for parts, labor and shipping charges.

This warranty is VOID if, in the opinion of Linn Electronics:

A) The product is modified in any manner.
B) The product has been repaired or serviced by anyone other than authorized dealers or repair stations licensed by the manufacturer.
C) The product is damaged because of not being properly installed, maintained or operated in accordance with the instructions contained in this booklet.

Under no circumstances shall the manufacturer be liable for any loss or damage, direct or consequential, arising out of the use of, or inability to use, this product.

Linn Electronics, Inc.
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